

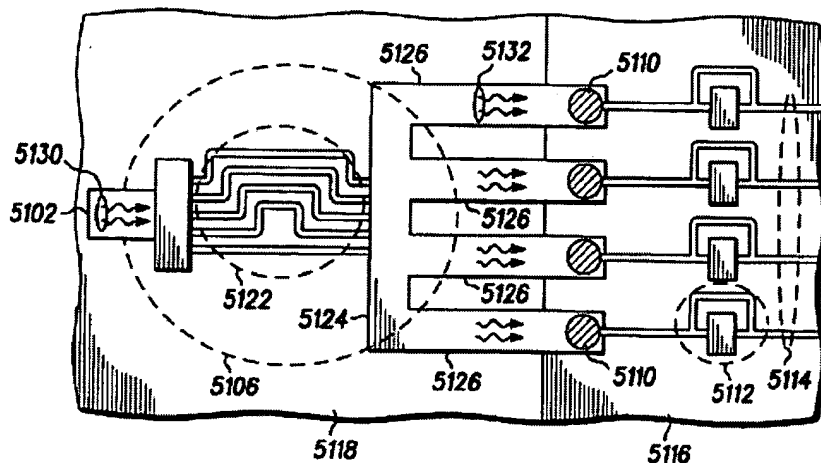
REMARKS

The July 28, 2005 Office Action was based upon pending Claims 1-40. This Amendment amends Claims 1, 2, 5-8, 16, 17, 20-23, 31, 32, and 35-39. Please cancel Claim 15, without prejudice. Thus after entry of this Amendment, Claims 1-14, and 16-40 are pending and are presented for consideration.

Rejections Based on Bosco, et al

Claims 1-11, 14-25, 28-30, 31, and 37-40 are rejected under 35 U.S.C. § 102(a) as being anticipated by Bosco, et al. (U.S. Publication. No. 2003/0015707). Claims 12 and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bosco in view of Magne (U.S. Patent No. 6,226,426).

The Office Action refers to Figure 58 of Bosco for teaching that the “the substrate 5118, and array of waveguides 5126 are optically aligned to the array of optical grating couplers.” Figure 58 of Bosco, reproduced below, illustrates a monocrystalline silicon structure 5116 and a monocrystalline compound semiconductor material 5118. *See Bosco*, paragraph [0208].



5100
FIG. 58

Applicants maintain that Claims 1-12, 14, 16-25, 27-30, 31, and 37-40, as amended, are patentable over Bosco alone or in combination with Magne, because Bosco and Magne both fail to teach each of the limitations recited in these claims. For example, Bosco and Mange do not teach or suggest at least “the first substrate being oriented in a first plane and the second substrate being oriented in a second plane, the first and second planes being substantially parallel,” as

recited in Claim 1. Nor do Bosco and Mange show “light propagating out of the first plane from the array of optical grating couplers and into the second plane to the array of optical devices or out of the second plane from the array of optical devices and into the first plane to the array of optical grating couplers,” as recited in Claim 1.

Additionally, Bosco and Mange do not teach or suggest the limitations of Claim 16 such as, for example, “the first substrate being oriented in a first plane and the second substrate being oriented in a second plane, the first and second planes being substantially parallel.” Bosco and Mange also do not teach “the first substrate is positioned substantially above the second substrate such that the plurality of optical grating couplers is optically aligned to the plurality of optical devices, light propagating out of the first plane from the array of optical grating couplers and into the second plane to the array of optical devices or out of the second plane from the array of optical devices and into the first plane to the array of optical grating couplers” as also recited in Claim 16.

Claim 31, as amended, recites: “an array of optical grating couplers formed on a first substrate; and an array of optical devices formed on a second substrate, the first substrate being disposed above the second substrate so that the array of optical grating couplers is positioned between the first and second substrates.” Applicants respectfully assert that Bosco and Mange fail to disclose such features.

Claim 37, as amended, recites “[a] flip-chip structure, comprising: a plurality of planar waveguides on a first substrate ... [and] an array of optical grating couplers on the second substrate ... the plurality of optical grating couplers and the plurality of planar waveguides being positioned between the first substrate and the second substrate.” Bosco and Mange fail to show a structure with such features as recited in Claim 37.

Claim 38, as amended, recites:

“A flip-chip structure, comprising: a plurality of electrical signal lines on a first substrate ... the first substrate being oriented in a first plane, [and] ... an array of optical grating couplers on a second substrate oriented in a second plane, the first and second planes being substantially parallel, ... the optical output signal being propagated out of the first plane and to the array of grating couplers in the second plane.”

Claim 39, as amended, recites “[a]n optoelectronic circuit ... comprising ... [an] array of optical grating couplers disposed in a first plane, optical signals propagating out of the first plane from

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the array of optical grating couplers, and ... [an] array of photodetectors disposed in a second plane, the optical signals propagating into the second plane to the array of photodetectors.” Bosco and Mange fail to disclose these feature recited Claims 38 and 39.

Claims 2-12 and 14 depend from Claim 1. Claims 17-25, and 27-30 depend from Claim 16. Claims 2-12, 14, 17-25, and 27-30 are believed to be allowable as well because the combination of features cited by these dependent claims is not taught by Bosco and Mange. Reconsideration and withdrawals of the rejection of Claims 1-12, 14, 16-25, 27-31, and 37-40 is respectfully requested.

Rejections Based on Kamon

Claims 32 and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kamon (U.S. Patent No. 5,285,258) in view of Ford (U.S. Patent No. 6,272,272) and Anderson (U.S. Patent Application No. 2003/0057363). Claims 33, 35, and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kamon in view of Ford as applied to Claims 32 and 34, and further in view of Giboney (U.S. Patent No. 6,318,909). Claim 32, as amended, recites “[a] method for optically coupling an array of optical devices formed on a first substrate to an array of optical grating couplers formed on a second substrate.” Claim 32 recites that “the first substrate is above the second substrate with the array of optical grating couplers therebetween.” Applicants respectfully assert that none of the cited art teaches the above-recited features of Claim 32, along with the remaining features of Claim 32. Claim 32 is therefore believed to be in condition for allowance. Claims 33-36 each depend from Claim 32 and are believed to be allowable as well because the combination of features cited by these dependent claims is not taught by the combination of references cited above. Reconsideration and withdrawal of the rejection of Claims 12, 27, and 32-36 is respectfully requested.

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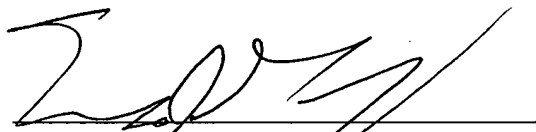
Summary

Applicants has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is respectfully requested. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly.

Respectfully submitted,

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